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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,506	10/01/2003	Robert A. DiChiara JR.	038190/262872	8545
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ALSTON & BIRD LLP BANK OF AMERICA PLAZA 101 SOUTH TRYON STREET, SUITE 4000 CHARLOTTE, NC 28280-4000				
			EXAMINER	
			SALVATORE, LYNDIA	
			ART UNIT	PAPER NUMBER
			1771	
			MAIL DATE	DELIVERY MODE
			07/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/676,506

Applicant(s)

DICHARA, ROBERT A.

Examiner

Lynda M. Salvatore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 11-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-10, 26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 5/14/07 have been fully considered and entered. Applicant's arguments are not found persuasive of patentability for reasons set forth herein below.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-5, 7-10, 26 and 27 stand rejected under 35 U.S.C. 103(a) as obvious over Bompard et al., US 6,585, 842 in view of De Jager, US 5,439,627 and further in view of Olson et al., US 5, 273,821.

Applicant argues that the composite of sheet of Bompard et al., is relatively heavy due to the carbon fiber tows and thus would have a density significantly higher than the density range taught by Olson et al. As such, Applicant argues a lack of motivation to combine the combination of references. This argument is not found persuasive.

In response to Applicant's arguments that the composite sheet of Bompard et al., is relatively heavy due to the carbon fiber tows, it is respectfully pointed out that Bompard et al., teach employing ceramic fibers as well. With regard to the number of filaments in each tow, Bompard et al., teach a broad range of filaments (e.g., 12K to 480K). Applicant's reference to the density of a carbon fiber composite from Toray or Hexcel is not considered relevant or comparable to a composite sheet made from ceramic fibers as taught by Bompard et al. Applicant has not adequately evidenced that the composite sheet of Bompard et al., made from ceramic fibers would have a density higher than the claimed density.

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With regard to the combination of Bompard et al., in view of Olson et al., it is the position of the Examiner that it is proper to look to the prior art to evidence that ceramic boards having the claimed density are known. To that end, the patent issued to Olson et al., teach a high strength ceramic fiberboard having a density of less than 22 lbs/ft³ (abstract). Said fiberboard is used in the formation of high temperature insulation boards (column 1, 9-13). Thus, it is appears that it is known in the art that ceramic fiber boards can be formed having the claimed density.

With regard to the Examiner reliance on "Official Notice" with respect to the binder, the Examiner maintains that the equivalence of water soluble polyvinyl alcohol binder and water soluble methylcellulose binder for their use in the field of reinforced laminated composite sheets. The selection of any of these known equivalents to form a composite structure would be within the level of one of ordinary skill in the art. The Examiner is not asserting that PVA and methylcellulose have the same chemical structure; rather the Examiner submits that both materials are functionally equivalent (e.g., water soluble) for the intended use of a binder material.

The patent issued to Bompard et al., teach forming a plurality of unidirectional sheets from continuous and discontinuous ceramic or glass filaments (abstract and column 8, 15-30). With regard to the rigid batting board limitation, Bompard et al., teach joining the plurality of sheets together and impregnating with an epoxy resin to form composite materials suitable to use as masts for boats (column 20, 19-25 and 53-58). With regard to the binder limitations, Bompard et al., teach fixing the sheet with a bonding agent (column 10, 9-24). Suitable bonding agents include water-soluble polyvinyl alcohol (column 9, 24-40). Suitable ceramic fibers include alumina and silica (column 8, 18-25). With regard to claim 7, Bompard et al., teach that the sheet

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can be a mixture of different kinds of fibers or hybrid filaments comprising a mixture of different fiber materials (column 8, 15-30). Since, Bompard et al., teach continuous and discontinuous ceramic fibers, the Examiner considers such a disclosure sufficient to meet the limitation of a sheet comprising chopped and continuous fibers (column 8,15-30). With regard to claim 26, Bompard et al., teach multi-layer or stacked composites (column 17, 65-column 18, 30). The Examiner considers a multi-layer structure sufficient to meet the limitation of providing two or more layers of ceramic fibers. With regard to claim 27, Bompard et al., teach a plurality of sheets comprising continuous, discontinuous and/or mixtures of hybrid fibers. As such, it is the position of the Examiner that the limitation of a board comprising at least one layer of continuous ceramic fibers and at least one layer of chopped ceramic fibers is encompassed by the teachings of Bompard et al. Said reinforcing plies are used to make composite parts (column 1, 10-20).

Bompard et al., fails to teach the claimed binder material, however, the patent issued to the patent issued to De Jager teaches a composite laminate comprising a mixture of aligned continuous and chopped ceramic filaments (column 1, 19-35, column 2, 50-55, column 3, 10-30, column 5, 25-35). De Jager teaches employing water-soluble methylcellulose binder to hold the filaments and/or particles together (column 5, 55-column 6, 25).

It is the position of the Examiner that it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the water soluble methylcellulose binder of De Jager as the bonding agent in the unidirectional sheets of Bompard et al. The Examiner takes Official Notice of the equivalence of water soluble polyvinyl alcohol binder and water soluble methylcellulose binder for their use in the field of reinforced laminated composite

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sheets. The selection of any of these known equivalents to form a composite structure would be within the level of one of ordinary skill in the art.

With regard to the limitations pertaining to the reverse thermal gelation properties, although De Jager., does not specifically teach reverse thermal gelation it is reasonable to presume that said property is inherent to the water soluble methylcellulose binder taught by De Jager. Support for said presumption is found in the use of like materials such methylcellulose, which would result in the claimed reverse gelation properties. The burden is shifted to Applicant to prove otherwise.

With regard to claim 10, the combination of prior art fails to teach the claimed binder content, however, De Jager does teach a binder content of 30% by volume in example 1 (column 10, 45-50). It would have been obvious to one having ordinary skill in the art at the time the invention was to optimize the amount of binder as a function of desired bond strength, toughness, and flexibility. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

With regard to claims 1 and 9, the combination of prior art does not teach the claimed density range, however, the patent issued to Olson et al., teach a high strength ceramic fiberboard having a density of less than 22 lbs/ft³ (abstract). Said fiberboard is used in the formation of high temperature insulation boards (column 1, 9-13).

Therefore, motivated by the desire to form a composite fiber board suitable for use where high strength is desired, it would have been obvious to one having ordinary skill in the art to form the

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ceramic composite board taught by the combination of Bompard et al., in view of De Jager having the density range taught by Olson et al.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynda M. Salvatore whose telephone number is 571-272-1482. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

July 23, 2007

ls

Ronda Salton
Primary Examiner
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